Amendment under 37 C.F.R. § 1.111
U.S. Appln. No. 10/685,456

Atty. Docket No. Q77945

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph on page 1 beginning with "The present invention relates ..." with the following amended paragraph:

The present invention relates to an apparatus, method and computer program product for checking web page links, and more particularly, to an apparatus, method and computer program product for detecting errors in ~~hyperlink hyperlink s~~ hyperlinks and relationships between links and target web pages.

Please replace the paragraph on page 1 beginning with "In recent years ..." with the following amended paragraph:

In recent years, companies, organizations, and people have had many occasions to make the computerized information public on the ~~site of~~ Internet. Most of information published on these sites are hypertexts.

Please replace the paragraph on page 3 beginning with "A fourth problem ..." with the following amended paragraph:

A fourth problem to be solved is that, in the aforementioned third conventional technology, the logically mismatch, such as disunity in the hyperlink, cannot be detected causing confusion by the fact that the ~~hyperlink s~~ hyperlinks have different expressions for the links to the same documents. The reason of this problem is that ~~hyperlink~~ a hyperlink having any appropriate syntax may be regarded as [[a]] normal.

Please replace the paragraph on page 17 beginning with "The attribute of ..." with the following amended paragraph:

The attribute of the <A> tag described in the document 101 shown in FIG. 2A has not only the href attribute but also a target attribute, a style attribute, or the like. The target attribute serves as an attribute for specifying which types of window is used to display thereon a document of a link target or a link destination. The style attribute serves as an attribute for specifying what size or which colors of a font, or highlighted representation are used to display the ~~hyperlink~~ hyperlink. When the document 101 shown in FIG. 2A is viewed with a browser, the document 101 may be displayed on the display screen as shown in FIG. 2B. The document 101 has links 201, 202, and 203 for the documents 102, 103, and 104, respectively, and having hyperlinks "GX0011", "GX0012", and "GX0013", respectively. The document 102 may be accessed by way of the link 201 when the ~~hyperlink~~ hyperlink "GX0011" in the document 101 is clicked. Similarly, the documents 103 and 104 may be accessed by way of the links 202 and 203, respectively, when the hyperlinks "GX0012" and "GX0013", respectively, in the document 101 are clicked.

Please replace the paragraph on page 18 bridging to page 19 beginning with "In the event ..." with the following amended paragraph:

In the event of the logical mismatch, it may be physically possible to access the link target, but there is a logical error made in the link of the pages ~~describing thereon~~ such as wrong product information, or the expired campaign information. When a document including the logically mismatched part is accessed, the server is not operated to replay any error message, as a

text in the link target exists as well as the server in the link target runs in good order. The

audience is, however, sometimes confused by an error link, as well as the administrator

sometimes suffers from responses to the applications for the expired campaign applied by the

audience. The logical mismatches therefore have significant implications no less than that of the

physical mismatch. There are some examples of the logical mismatch including, but are not

limited to, (1) putting a link to a wrong destination, (2) putting a link to an expired information,

(3) inconsistency in the hyperlink, (4) inconsistency in the styles of the hyperlinks, (5) a phantom

link, and (6) a loop link, and so on. Examples of each logical mismatch are described in detail in

the following with reference to the drawings.

Please replace the 3 paragraphs on page 19 bridging to page 20 beginning with "As

shown in FIG. 3 ..." with the following amended paragraphs:

As shown in FIG. 3, "putting a link to a wrong destination" means a mismatch caused

between the contents expected from the hyperlink appearing on the source web page hyperlink

and the practical contents in the text of the target web page. In FIG. 3, the hyperlinks of all of

the links 211, 212, 213, and 214 are same in the description "GX0011". All of the link targets of

the documents 111, 112, and 113 indicate the same document 116 which is representative of the

product introduction of "GX0011", but the link target of the document 114 indicates the wrong

document 117 which is representative of the product introduction of "GX0012". Therefore the

audience can access the document 116 for the introduction information of "GX0011" as expected

when browsing the documents 111, 112, and 113, but cannot access the document 116 as

expected when browsing document 114. When browsing the document 114, the audience is

linked to information different from that expected from the ~~hyperlink~~ hyperlink "GX0011,"
thereby causing confusion to the audience.

Moreover, all of the destinations of the links 211, 212, 213 and 215 indicate the same document 116, but the ~~hyperlink~~ hyperlink of link 215 incorrectly describes the destination as "GX0012". Therefore, when browsing document 115, another product introduction which is different from that expected from the ~~hyperlink~~ hyperlink "GX0012" is displayed. This will again cause confusion to the audience.

Furthermore, the document 115 has two of links 215 and 216 to the documents 116 and 117, respectively. Both of the links 215 and 216, however, have the same hyperlink hyperlink "GX0012". Therefore, the audience who browses the document 115 finds the different contents of the documents 116 and 117 in spite of the fact that the audience selects the same ~~hyperlink~~ hyperlink "GX0012".

Please replace the 2 paragraphs on page 20 bridging to page 21 beginning with "In FIG. 4A ..." with the following amended paragraphs:

In FIG. 4A, it is announced, in the document 125, that a campaign is conducted for a limited time between July 20th, 2002 and August 31st, 2002. The documents 121, 122, 123 and 124 have the same ~~hyperlink~~ hyperlink "free admission fee" for putting links 221, 222, 223 and 224, respectively, to the document 125 having contents of the campaign.

In FIG. 4B, it is announced, in the document 125, that the campaign is terminated because the date has expired. In the documents 121, 122 and 123, therefore, the link for the contents of the document 125 for the campaign is already eliminated. In the document 124,

however, the link for the contents of the document 125 for the expired campaign is not

eliminated yet, therefore the link 224 to the document 125 and the ~~hyperlink~~ hyperlink "free

admission fee" is still left. Thus, the audience who browses the document 124 cannot be

provided with a service shown in the ~~hyperlink~~ hyperlink "free admission fee" as expected.

Please replace the paragraph on page 21 beginning with "As shown in FIG. 5 ..."

with the following amended paragraph:

As shown in FIG. 5, the disunity in the hyperlinks means a mismatch when there is an

error, for example, but not limited to, a typographical error, in the hyperlinks. In FIG. 5, the

documents 131, 132, 133, and 134 put the links 231, 232, 233, and 234 to the document 135. All

of the hyperlinks of the links 231, 232, and 233 indicate "GX Series", except for the ~~hyperlink~~

hyperlink of the link 234 which indicates "gX Series". Therefore, the audience who browses the

document 134 may believe that the ~~hyperlink~~ hyperlink "gX Series" is different from "GX

Series", and follow the link 234.

Please replace the 2 paragraphs on page 21 bridging to page 22 beginning with "As

shown in FIG. 6 ..." with the following amended paragraphs:

As shown in FIG. 6, the disunity in the style of the ~~hyperlink~~ hyperlink means a

mismatch in different views of the link, or different effects when clicking on a link button, for

example, due to different style or target attributes. In FIG. 6A, the document 141 has four links

241, 242, 243, and 244, three of which specify the target attribute as "_blank" so as to open a

pop-up window to display the page of the link target thereon. Therefore, the audience browsing

the document 141 as shown in FIG. 6B may browse the documents 142, 143, and 144 of the link

targets corresponding to links 241, 242, and 243 one after another in pop-up windows while the

document 141 is displayed on the screen. The display of a target web page in a pop-up window

is convenient when browsing a collection of links, in which the audience may browse documents

of the different link targets one after another while browsing the original document. However,

no target attribute is specified in the link 244. Therefore, the browser changes the display from

the original page to the linked page when the link button is clicked, rather than displaying the

linked page in a pop-up window. Since the documents change when the link 244 is clicked, the

audience must look for a link to return the original document 141, or use a browser return button.

In this embodiment, the example of the disunity in the style of the ~~hyperlink~~ hyperlink

described above includes the disunity in the target attribute in the document, but is not limited to,

and may further include a mismatch in the different color of some links, and in the different

highlighted representation of the some links, due to the disunity in the style attribute.

Please replace the paragraph on page 22 beginning with "In this embodiment ..."
with the following amended paragraphs:

In this embodiment, the example of the disunity in the hyperlinks described above

includes the difference between a capital and small letter in the hyperlink, but is not limited to,

and may further include: a fluctuation between an English and Japanese characters; differences

in "*katakana*" descriptions, such as "vaiorin" and "baiorin", both corresponding to "violin" in

English; differences between a "*katakana*" and "*hiragana*", another kind of Japanese character~~,~~

~~description~~; differences in vague or fuzzy similar expression, such as "event information" and

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"seminar information"; and spelling errors such as "Series" and "Selies".

Please replace the paragraph on page 23 bridging to page 24 beginning with "In this

embodiment ..." with the following amended paragraphs:

In this embodiment, the phantom link described above includes, but is not limited to, no

visible hyperlink, and may further include the case where it is difficult to visually recognize the

link through the browser because the hyperlink appearing on the source web page hyperlink is

described as a transparent image, a small image or character, or an image or character which is

the same color as that of a background. Even if it is possible to see the hyperlink, it may be

impossible to distinguish the link from the body text, if the style of the ~~hyperlink~~ hyperlink is

the same as that of the body text and there is no highlighted representation. This case, therefore,

is included in the phantom link because the link cannot be visually confirmed on the display

screen of the browser.

Please replace the paragraph on page 24 beginning with "As shown in FIG. 8 ..."

with the following amended paragraph:

As shown in FIG. 8, the loop link means a mismatch where the audience sequentially

follows links for certain information resulting in the return to the original page. In FIG. 8, the

document 161 has a link 261 to the document 162 with the hyperlink appearing on the source

web page hyperlink "Information about a present". The document 162 has a link 262 to the

document 163 with the link description "Digital camera present". Finally, the document 163 has

a link 263 to the document 161 with the ~~hyperlink~~ hyperlink "Click here to a present". When

the audience browsing the document 161 is interested in "Information about a present" in the document 161, the audience will follow the link 261. The audience may find that there is also the link 262 having the ~~hyperlink~~ hyperlink "Digital camera present" in the document 162. Therefore, the audience may expect more information about the present to be followed by the next link, and then may access the document 163. However, the document 163 has the ~~hyperlink~~ hyperlink "Click here to a present". Therefore, the audience may intend to acquire desired information and then follow the link 263. Ultimately, the link 263 will be followed to the original document 161. The audience may be confused about where to find the desired information. Thus, the loop link causes a problem that the audience will wander through documents without any desired information.

Please replace the paragraph on page 25 beginning with "The information collecting unit ..." with the following amended paragraph:

The information collecting unit 11 is designed to fetch documents from the hypertext database 21 included in the storage device 2, to retrieve link information, and to store the link information in the information storing unit 22. In this embodiment, the link information may include some items such as an address of the source web page, an address of the target web page, a hyperlink, a target attribute, a style attribute, and so on. The information storing unit 22 may record ~~thereon a body of~~ for the document, an updated date, a date and time of acquisition, and a condition when the document is acquired, such as an error or success, in addition to the link information.

Please replace the paragraph on page 26 beginning with "The information storing unit ..." with the following amended paragraph:

The information storing unit 22 is capable of storing therein an information about links included in each documents in the hypertext database 21. Fig. 9 shows an example of the link information. For example, the link information included in the document 101 shown in FIGS. 2A and 2B is illustrated in FIG. 9. It will be understood from FIG. 9 that the document 101 has: a link 201 which is linked to the document 102 by way of a ~~hyperlink~~ hyperlink "GX0011"; a target attribute of which is designated by "_blank"; and a style attribute of which is designated by "st01". Although the ~~hyperlink~~ hyperlink is described as a text format in this embodiment, the ~~hyperlink~~ hyperlink may be designated by an address of the specified image file when the ~~hyperlink~~ hyperlink is specified as an image. Furthermore, there may be provided a character recognition module. The character recognition module may be executed upon the image file so as to extract a text embedded in the image and to store the extracted text in the information storing unit 22.

Please replace the paragraph on page 32 beginning with "Firstly, the condition ..." with the following amended paragraph:

Firstly, the condition detecting unit 13 is operated to read out the link information from the information storing unit 22 to divide the links into some groups in accordance with the link information. The condition detecting unit 13 divides links having the same hyperlink into a ~~same~~ group. Then, the condition detecting unit 13 further divides the links ~~which is divided in the same group,~~ having the same link target into a ~~same~~ sub-group. Then, the condition detecting

unit 13 extracts the links which ~~has~~ have the different link target. The condition detecting unit

13 is further operated to give an criteria score to each of the links in accordance with the number

of links included in the sub-group (the step T11 in FIG. 14).

Please replace the paragraph on page 33 bridging to 34 beginning with "In the

following step ..." with the following amended paragraph:

In the following step T12 in FIG. 14, the condition detecting unit 13 is operated to read

out the link information from the information storing unit 22 to divide the links into some groups

in accordance with the link information. The condition detecting unit 13 divides links having the

same link target into a ~~same~~ group. Then, the condition detecting unit 13 further divides the

links ~~which is divided in the same group,~~ having the same hyperlink into a ~~same~~ sub-group.

Then, the condition detecting unit 13 extract the links which ~~has~~ have the different hyperlink.

The condition detecting unit 13 is further operated to give an criteria score to each link in

accordance with the number of links included in the sub-group.

Please replace the paragraph on page 34 bridging to 35 beginning with "In the

following step ..." with the following amended paragraph:

In the following step T13 in FIG. 14, the condition detecting unit 13 is operated to read

out the link information from the information storing unit 22 to divide the links into some groups

in accordance with the link information. The condition detecting unit 13 divides links having the

same link source and hyperlink into a ~~same~~ group. Then, the condition detecting unit 13 further

divides the links~~, which is divided in the same group,~~ having the same link target into a ~~same~~

sub-group. Then, the condition detecting unit 13 extracts the links which ~~has~~ have the different

link target. The condition detecting unit 13 is further operated to give an criteria score to each

link in accordance with the number of links included in the sub-group.

Please replace the paragraph on page 32 beginning with "Firstly, the condition ..."

with the following amended paragraph:

Firstly, the condition detecting unit 13 is operated to read out the link information from

the information storing unit 22 to divide the links into some groups in accordance with the link

information. The condition detecting unit 13 divides links having the same link target into a

~~same~~-group. Then, the condition detecting unit 13 further divides the links ~~which is divided in~~

~~the same group,~~ having the same hyperlink into a ~~same~~-sub-group. Then, the condition detecting

unit 13 extracts the links which ~~has~~ have the different hyperlink. The condition detecting unit 13

is further operated to give an criteria score to each link in accordance with the number of links

included in the sub-group, in the step T31 in FIG. 17.

Please replace the paragraph on page 45 beginning with "Firstly, the condition ..."

with the following amended paragraph:

Firstly, the condition detecting unit 13 is operated to read the link information from the

information storing unit 22 to divide the links into some groups in accordance with the link

information. The condition detecting unit 13 divides links having the same link source document

into a ~~same~~-group. Then, the condition detecting unit 13 further divide the links ~~which is divided~~

~~in the same group,~~ having the same target attribute into a ~~same~~-sub-group. Then, the condition

detecting unit 13 extracts the links which ~~has~~ have the different target attribute. The condition

detecting unit 13 is further operated to give an criteria score to each link in accordance with the

number of links included in the sub-group, in the step T41 in FIG. 19.